NELP Evaluates Management Systems

HSMS & APIMS Capabilities Assessed

The Navy Environmental Leadership Program (NELP) maintains the Navy's commitment to environmental excellence by managing NELP sponsored projects like the Hazardous Substance Management System (HSMS) and the Air Program Information Management System (APIMS) Evaluation for Supporting Clean Air Act (CAA) Reporting Requirements.

NELP, in cooperation with the Environmental Department Naval Station (NAVSTA) Mayport, Southern Division Navy Facilities Engineering Command (SOUTHDIV) and Shaw Environmental, Inc. has completed an evaluation of the Hazardous Substance Management System (HSMS) and the Air Program Information Management System (APIMS) Evaluation for Supporting Clean Air Act Reporting Requirements at NAVSTA Mayport, Florida. The objective of this project was to identify and compare the capabilities of the HSMS and APIMS software programs in providing NAVSTA Mayport's Air Program Manager with data to meet CAA compliance reporting requirements. The results of the project were to also assist the Navy in determining the feasibility and/or need to implement additional software programs such as APIMS throughout the Navy for CAA compliance support.

The software evaluation process was accomplished through the completion of the following steps:

- Evaluation of the level of effort required inputting and extracting pertinent data from HSMS and APIMS at NAVSTA Mayport,
- Evaluation of the labor hours associated with the preparation of NAVSTA Mayport's compliance reports required by CAA using the data from each of the HSMS and APIMS software programs, and
- Evaluation of current methodology and the level of effort used at NAVSTA Mayport for preparing CAA compliance reports (i.e. status quo).

"The HSMS and APIMS Evaluation for Supporting Clean Air Act Reporting Requirements is another example of NELP's tasking to serve as a test bed for new and innovative technologies that address environmental issues and affect the Navy."

—Diane Lancaster, NELP Manager

Naval Station Mayport.

Background Information

HSMS is the Department of Defense (DoD) standard, automated information management system for tracking hazardous substances. The system is designed to track and restrict the issuing of hazardous materials through a central distribution center. HSMS is a powerful relational database used by the Navy and other branches of the U.S. Armed Forces to support both hazardous material usage and inventory on a product and chemical component basis. HSMS also identifies the locations, individuals, and processes utilizing hazardous materials. NAVSTA Mayport currently uses HSMS to support CAA reporting; however there are many additional functions and data fields within HSMS that could be used to better support these needs. During the project, Shaw conducted an investigation to identify which functional areas and/or data fields within HSMS could best support CAA reporting requirements.

APIMS is a component of the Command Core System (CCS) being developed by the Air Force Material Command (AFMC). The CCS began as an industrial hygiene and safety management system developed for Hill Air Force Base (AFB) in 1991. The CCS later replaced the Phoenix program used by the Air Force for exposure monitoring. The air program management system called Air Quality Utility Information System (AQUIS) developed by Argonne National Laboratory (ANL) under contract for AFMC in the early 1990's was migrated into Command Core and eventually became APIMS. The APIMS system has been implemented at nearly all Air Force installations worldwide. Designed to support air regulatory compliance requirements, APIMS is equipped with current U.S. Environmental Protection Agency (EPA) AP-42 and fire database emission factors.

APIMS was installed at NAVSTA Mayport for the evaluation in early 2003. The implementation process was conducted by an AFMC contractor and consisted of three site visits to:

1. Provide NAVSTA Mayport personnel with an overview of APIMS and data handling exercises,
2. Complete the data loading process, and

ABOUT NELP

The Chief of Naval Operations chartered NELP at NAVSTA Mayport in 1993. The mission of NELP is to support Navy warfighter operational readiness through the identification, demonstration and communication of innovative ways to perform daily operations while minimizing the impacts on our environment and promoting environmental stewardship. The program serves as a test bed for new and innovative technology and focused management that addresses the full spectrum of environmental issues. NELP exports its successes and lessons learned throughout the Navy and Marine Corps family.

3. Input regulatory document and applicable reporting requirement information into the APIMS system.

Findings

HSMS

The current approach for preparing CAA reports and documenting monthly emission data at NAVSTA Mayport was approximately 564 manhours per year. This level of effort was potentially reduced with CAA improvements to the NAVSTA Mayport HSMS database (to 398 manhours). This reduction in effort was obtained through an initial one-time level of effort expenditure of 199 man-hours to capture an important emission source category (e.g., such as surface coating operations) for a major tenant (i.e., Supervisor of Shipbuilding, Conversion and Repair (SUPSHIP)). The investigation showed that manpower costs savings could be achieved by using an improved HSMS to support CAA reporting.

The investigation also showed that the level of effort reduction using HSMS might not be obtainable for all air emission sources. Emission sources that are more difficult to support with HSMS include storage tanks, combustion sources (boilers, engine testing, emergency generators), and water treatment processes. The use of HSMS to determine manufactured chemical compounds or conducting complex release calculations would not be cost effective and not as accurate as using other proven methods. Such emission units and resulting pollutant determination are beyond the original design capabilities of HSMS.

APIMS

The system was specifically designed for meeting CAA needs and because of this, contains adequate information on emission units for regulatory compliance and tracking purposes (including emission source description, source identification numbers, control equipment data, stack test data, test description, inspection checklists, permit data and emission limits).

Alternatively, the APIMS system weaknesses showed that it is not linked to HSMS to automatically obtain material usage and Material Safety Data Sheets (MSDS) data. This information must be repeatedly entered either through "the back door" of the system using application program interfaces (APIs) or entered manually using the software. Different APIs must be completed for each data table. The database has no user ad hoc report writing capability. The user is required to know how to access the data using an open database connection (ODBC) and export the data into another report writing program to develop and use reports. When running emission calculations, the user must provide the system with the name of each chemical emitted from the process. This may be difficult if the user does not know the chemical constituents present in every material used by the process.

As a result of this evaluation, Commander, U.S. Atlantic Fleet determined that APIMS would not be used at Naval installations for air pollution control reporting. ⚓

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